

**CLAIMS**

1. A manufacturing process of a composite nonwoven composed of two webs, respectively, a lower web comprising long artificial and/or synthetic fibres, the size of which is between 15 and 80 mm and an upper web comprising short natural fibres, the size of which is between 0.5 and 8 mm, characterized, on-line, by:
  - dispersing first of all the natural fibres into the water,
  - then, putting the aqueous dispersion thus obtained on a carded lower web that is about to form or has been manufactured beforehand,
  - then filtering the excess water through the lower web,
  - then interlacing the fibres of the upper web with the fibres of the lower web with water jets,
  - finally, drying and then reeling up the obtained composite nonwoven.
- 15 2. A process according to claim 1, characterized in that the artificial or synthetic fibres are chosen from the group comprising the viscose, polyester, polypropylene, polyamide, polyacrylic, polyvinyl alcohol and polyethylene fibres, as such or as a mixture.
- 20 3. A process according to claim 1, characterized in that the fibres making up the lower web have a dtex degree superior or equal to 1,7 dtex..
- 25 4. A process according to claim 1, characterized in that the mass of the lower web is at least 25 g/m<sup>2</sup>.
- 30 5. A process according to claim 1, characterized in that the interlacing of the fibres of the upper web with the fibres of the lower web is obtained by water jets, the number of which is between 2 and 12, each water jet being equipped with perforated plates, each of them comprising one or two rows of holes having a diameter of between 80 and 160 micrometers, the holes of each row being spaced 0.4 – 1.8 mm apart and the rows themselves being spaced 0.5 – 2mm

apart, each injector being supplied with water at a pressure of between 20 and 140 bars.

6. A process according to claim 1, characterized in that when the lower web is  
5 formed on-line, it is pre-bonded before deposit of the aqueous solution.

7. A process according to claim 1, characterized in that the lower web makes up between 30 and 70 % by weight of the composite.

10 8. A process according to claim 1, characterized in that the natural fibres are cellulose fibres.

9. A process according to claim 1, characterized in that the upper web further contains synthetic fibres making up at least 50 % by weight of the web.

15 10. A process according to claim 1, characterized in that the upper web makes up between 30 and 70 % by weight of the composite.

11. A process according to claim 1, characterized in that the fibres of the upper  
20 web are exclusively cellulose fibres, the concentration of the said fibres in the aqueous dispersion being between 0.5 and 10 g/l.

12. A process according to claim 1, characterized in that before drying, the composite is subjected to an embossing step.

25 13. A process according to claim 1, characterized in that before reeling up, the composite is subjected to a softening step.

14. An installation for carrying out the process object of one of the claims 1 to  
30 13.

15. An installation for manufacturing a composite support composed of two webs, respectively, a lower web comprising long artificial and/or synthetic fibres, the size of which is between 15 and 80 mm, and an upper web comprising short natural fibres, the size of which is between 0.5 and 8mm, characterized by:
- 5 - a conveyor (3) for transporting a carded lower web that is about to form or has already been manufactured,
- a head box (4) set above the conveyor (3) and intended to contain an aqueous dispersion comprising the natural fibres,
- suction means set under the conveyor (3) and intended to eliminate the
- 10 excess water as the aqueous dispersion is put on the lower web,
- bonding means by water jets (5) placed above the conveyor and downstream of the head box (4), intended to interlace the fibres of the upper web with those of the lower web,
- drying means (9) of the composite placed downstream of the conveyor (3),
- 15 - reeling means (11) of the dry composite.
16. An installation for manufacturing a composite support according to claim 14, characterized in that it comprises bonding means by water jets (5) in form of several hydraulic injectors provided with perforated plates, each of them comprising one or two rows of holes having a diameter of between 80 and 160 micrometers, the holes of each row being spaced 0,4 – 1,8 mm apart and the rows themselves being spaced 0,5 – 2 mm apart, the number of injectors being between 2 and 12 and supplied at a pressure of between 20 and 140 bars.
- 25 17. An installation for manufacturing a composite support according to claim 15, characterized in that it comprises manufacturing means (1) of the lower web placed upstream of the conveyor (3).
- 30 18. An installation for manufacturing a composite support according to claim 17, characterized in that it comprises, between the manufacturing means of the lower web (1) and the conveyor (3), a hydraulic pre-bonding unit (2) comprising

a pre-wetting ramp of the web (2a) and a support roll (2b), around which are placed the hydraulic injectors (2c).

19. An installation for manufacturing a composite support according to claim 15,  
5 characterized in that it comprises, before the drying unit (9), a hydraulic embossing calendar (6) consisting of a suction roll (6a) coated with a wire, the surface of which has an embossed design and hollows, the said roll being associated with hydraulic injectors (6b) placed around its surface.
- 10 20. An installation for manufacturing a composite support according to claim 15,  
characterized in that it also has, prior to the reel-up (11), a softening device (10).